

What is claimed is:

[Claim 1] 1. A method for controlling a stepping motor in an optical storage system, which comprises a pick-up head for achieving a short seek, the method comprising:

calculating a number of steps that the stepping motor should rotate; and

moving the pick-up head toward a target position by having the stepping motor rotate according to the number of steps.

[Claim 2] 2. The method of claim 1, wherein the pick-up head is placed on a sled, the sled being electrically connected to the stepping motor, and the method further comprises:

utilizing the stepping motor for driving the sled to move the pick-up head toward the target position.

[Claim 3] 3. The method of claim 1, wherein the optical storage system further comprises an object lens placed movably on the pick-up head, and the method further comprises moving the object lens toward a target track.

[Claim 4] 4. The method of claim 3 further comprising:

moving the object lens from an initial track to the target track according to a predetermined speed; and

determining at least one step according to a distance between the initial track and the target track.

[Claim 5] 5. The method of claim 3, wherein a shift distance is between the object lens and the center of the pick-up head, and the method further comprises:

stopping utilizing the stepping motor to move the pick-up head if the shift distance is lower than a predetermined shift range, while the object lens has not reached the target track, and the stepping motor has not rotated according to the number of steps; and

utilizing the stepping motor to move the pick-up head if the shift distance is greater than the predetermined shift range, while the object lens has not reached the target track, and the stepping motor has not rotated according to the number of steps.

[Claim 6] 6. The method of claim 1, wherein the optical storage system further comprises a control module for controlling operations of the stepping motor, the pick-up head, and the object lens.

[Claim 7] 7. A method of achieving a short seek in an optical storage system, the optical system having a stepping motor, a pick-up head, and an object lens, the method comprising:

- (a) calculating a number of steps that the stepping motor should rotate;
- (b) after step (a), utilizing the stepping motor to move the pick-up head toward a target position and move the object lens toward a target track at the same time;
- (c) determining if the object lens has reached the target track, wherein the short seek is finished if the object lens has reached the target track; otherwise, step (d) is performed; and
- (d) continuing to move the object lens until the pick-up head has reached the target position and then returning to step (c); otherwise, repeating step (d).

[Claim 8] 8. The method of claim 7 further comprising:

- (e) during step (d), when the pick-up head has not reached the target position and the object lens has not reached the target track, checking if a shift distance is lower than a

predetermined shift range; if true, then stopping utilizing the stepping motor to move the pick-up head; otherwise, going to step(f); and

(f) continuing to utilize the stepping motor to drive the pick-up head according to a predetermined speed, and then returning to step (e);

wherein the shift distance is between the object lens and a center of the pick-up head.

[Claim 9] 9. The method of claim 7, wherein the pick-up head is placed on a sled, the sled is electrically connected to the stepping motor, and step (b) utilizes the stepping motor to drive the sled.

[Claim 10] 10. The method of claim 7 further comprising:

(g) in step (b), moving the object lens from an initial track to the target track according to a predetermined speed curve; and

(h) in step (b), calculating the number of steps that the stepping motor should rotate according to a distance between the initial track and the target track.

[Claim 11] 11. The method of claim 7, wherein the stepping motor and the object lens move along a radial direction in step (b).

[Claim 12] 12. The method of claim 7, wherein the optical storage system further comprises a control module for controlling operations of the stepping motor, the pick-up head, and the object lens.

[Claim 13] 13. An optical storage system comprising:

a sled placed movably in the optical storage system;

a pick-up head placed on the sled;
an object lens placed movably on the pick-up head;
a stepping motor electrically connected to the sled for driving the sled to move the pick-up head and stopping the sled and the pick-up head when a shift distance is lower than a predetermined range, and
a control module electrically connected to the stepping motor, the pick-up head, and the object lens for controlling operations of the stepping motor, the pick-up head, and the object lens.

[Claim 14] 14. The optical storage system of claim 13, wherein the sled and the object lens move along a radial direction.

[Claim 15] 15. The optical storage system of claim 13, wherein the shift distance is a distance between the object lens and a center of the pick-up head.

[Claim 16] 16. The optical storage system of claim 13, wherein the stepping motor is implemented for a short seek.